



**CMG Technologies**  
Unit 11, Thompson Drive,  
Base Business Park, Rendlesham,  
Woodbridge, Suffolk, IP12 2TZ,  
United Kingdom  
**Tel** + 44 (0) 1394 445 100  
**Fax** + 44 (0) 1394 445 109  
**Email** sales@cmgtechnologies.co.uk  
**www** www.cmgtechnologies.co.uk

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## **Technical Data Sheet: CMG Tech-X 316L HMs metal filament for 3D printing**

### **Description**

316L is a stainless steel with high corrosion resistance. CMG Tech-X 316L HMs filament is a high flexibility metal-polymer composite containing more than 90 percent by weight metal powder, allowing printing of parts with high quality surface. Filaments are available in 1.75 mm and 2.85 mm diameters. Parts printed with CMG Tech-X 316L HMs filament have successfully been used in applications such as propellers for boats, gliders for blinds operated electrically and assembled parts for use in electromagnetic shielding application.



Fig. 1: Sintered boat propellers printed with CMG Tech-X 316L HMs filament.

### **Scaling factor**

Typical values:

x-y: 118%

z: 117%

Range: 116-121% depending on printing parameters, build direction, part size, part geometry and sintering conditions

### **Shelf life**

6-12 months if properly stored. Keep away from moisture. Store in a dry and clean place at room temperature.



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**Typical printing parameters:**

Nozzle temperature: 120-160 °C, typical 140-160 °C (direct drive printers) & 150-160 °C (Bowden tube printers)

Print bed temperature: 20-30 °C

**Debinding & Sintering**

Debinding:

At CMG Technologies or with appropriate debinding station. Debinding is carried out in acetone at 42 °C with weight loss of 5-6 %. Typical debinding time is 24-72 hours depending on size of part, wall thickness and infill %.

Sintering:

At CMG Technologies or with appropriate sintering furnace. Sintering can be carried out at up to 1265 °C for 1-2 hours in H<sub>2</sub> atmosphere with backbone polymer removal at 600 °C. Backbone polymer removal should be carried out under overpressure or vacuum for bright sintered parts.

**Typical properties:**

All measurements were carried out by external analytical labs. Mechanical property, hardness and density measurements are in accordance with ASTM A370, ASTM E18, and RP146, respectively. All test specimens were printed flat in x-y printing direction.

<b>Property</b>	<b>As-sintered</b>
Yield strength, 0.2% offset (MPa)	270.8
Tensile strength (MPa)	526.7
Elongation (%)	26.2
Hardness, HRB	76
Density (g/cm <sup>3</sup> )	7.55

*Any information supplied above are general recommendations and shall be used for informational and guidance purposes only. No information shall be used for other purposes without agreement with customer.*